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(71)Applicant : SAMSUNG ELECTRONICS CO LTD

(72)Inventor : SUNG WOO-DONG
HAN SAM-SOON
OH CHANG-WOOK
LEE KANG-SIK

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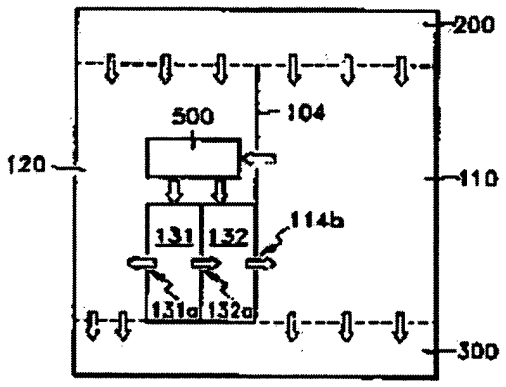
(54) CLEANING METHOD OF MICROELECTRONIC MANUFACTURING SYSTEM AND MICROELECTRONIC MANUFACTURING SYSTEM CLEANED USING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a method of cleaning an electronic manufacturing system so as to reduce its contamination and to improve a microelectronic element in yield and a microelectronic manufacturing system cleaned using the method.

SOLUTION: A microelectronic manufacturing system is equipped with a service region 120, a wafer processing region 131 where microelectronic elements are processed, and a wafer transfer region 132 where wafers are transferred, where the wafer transfer region 132 is set lower in air pressure than the wafer processing region 131, by which particles are less moved from the wafer transfer region 132 to the wafer



processing region 131, to keep the wafer processing region 131 clean. The pressure of the wafer processing region 131 is set higher than that of the wafer transfer region 132, by which particles are prevented from flowing from the wafer transfer region 132 to the wafer processing region 131.

LEGAL STATUS

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* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] The cleaning method of a microelectronics manufacturing system of being the cleaning method of a microelectronics manufacturing system equipped with a service field, the process field where it is prepared in the aforementioned service field, and the process of the microelectronics element is carried out, and the transfer field which is established in the aforementioned service field and transport a wafer to the aforementioned process field, and carrying out maintaining the pneumatic pressure of the aforementioned process field highly than the pneumatic pressure of the aforementioned transfer field so that a flow of the particle from the aforementioned transfer field to the aforementioned
[Claim 2] It is the cleaning method of the microelectronics manufacturing system which is the manufacture method of the microelectronics manufacturing system further equipped with the working area connected with the aforementioned service field, and is carried out [that the pneumatic pressure of the aforementioned transfer field maintains the aforementioned transfer field more highly than the pneumatic pressure of the aforementioned working area so that it may connect with the aforementioned working area and a particle flow to the aforementioned working area from the aforementioned transfer field may improve, and] as the feature.
[Claim 3] It is the cleaning method of the microelectronics manufacturing system according to claim 1 or 2 characterized by maintaining the pneumatic pressure of the aforementioned process field more highly than the pneumatic pressure of the aforementioned service field near [aforementioned] the process field so that a particle flow of the aforementioned service field near [aforementioned] the process field may improve from the aforementioned process field.
[Claim 4] The cleaning method of the microelectronics manufacturing system according to claim 1 or 3 characterized by being the cleaning method of the microelectronics manufacturing installation further equipped with the working area connected with the aforementioned service field, introducing the air from the aforementioned working area into the aforementioned transfer field and the aforementioned process field, and maintaining the pneumatic pressure of the aforementioned process field highly as compared with the pneumatic pressure of the aforementioned transfer field.
[Claim 5] The cleaning method of the microelectronics manufacturing system according to claim 2 or 3 characterized by maintaining the pneumatic pressure of the aforementioned working area highly as compared with the pneumatic pressure of the aforementioned service field.
[Claim 6] The up plenum connected with the aforementioned working area and the aforementioned service field, It has further the lower plenum connected with the aforementioned working area and a service field. Are constituted so that the air which flowed from the aforementioned up plenum may carry out the aforementioned lower plenum inflow through the aforementioned working area and the aforementioned service field, and it compares with the flow rate of the air from the aforementioned up plenum in the aforementioned service field to the aforementioned lower plenum. By enlarging the flow rate of the air from the aforementioned up plenum in the aforementioned working area to the aforementioned lower plenum The cleaning method of the microelectronics manufacturing system according to claim 5 characterized by maintaining the pneumatic pressure of the aforementioned

working area highly as compared with the pneumatic pressure of the aforementioned serve ******.
[Claim 7] It is the cleaning method of the microelectronics manufacturing system according to claim 1 characterized by connecting the aforementioned transfer field with the aforementioned working area, and discharging the air from the aforementioned transfer field to the aforementioned working area in order to have further the working area connected with the aforementioned service field and to improve a particle flow to a working area from the aforementioned transfer field.
[Claim 8] The up plenum connected with the working area connected with the aforementioned service field, and the aforementioned working area and a service field, It has further the lower plenum connected with the aforementioned working area and a service field. It is constituted so that the air which flowed from the aforementioned up plenum may flow into the aforementioned lower plenum through the aforementioned working area and a service field. The cleaning method of the microelectronics manufacturing system according to claim 1 characterized by discharging the air from the aforementioned transfer field to the aforementioned working area in order to improve a particle flow to a working area from the aforementioned transfer field.
[Claim 9] The microelectronics manufacturing system carry out having a means maintain the pneumatic pressure of the aforementioned process field highly as compared with the pneumatic pressure of the aforementioned transfer field in order to reduce a particle flow to a service field, the process field where it is prepared in the aforementioned service field, and the process of the microelectronics element is carried out, the transfer field which is established in the aforementioned service field and transports a wafer to the aforementioned process field, and the aforementioned process field from the aforementioned transfer field as the feature.
[Claim 10] The microelectronics manufacturing system according to claim 9 characterized by having further the working area connected with the aforementioned service field and the aforementioned transfer field, and a means to maintain the pneumatic pressure of the aforementioned transfer field highly as compared with the pneumatic pressure of the aforementioned working area in order to improve a particle flow to a working area from the aforementioned transfer field.
[Claim 11] The microelectronics manufacturing system according to claim 9 or 10 characterized by having further a means to maintain the pneumatic pressure of the aforementioned process field highly as compared with the pneumatic pressure of the service field of the outside of the aforementioned process field in order to improve a particle flow to the service field of the outside of the aforementioned process field to the aforementioned process field.
[Claim 12] The microelectronics manufacturing system according to claim 9 characterized by having further the working area connected with the aforementioned service field, and a means to make the air from the aforementioned working area flow to the aforementioned transfer field and the aforementioned process field in order to maintain the pneumatic pressure of the aforementioned process field highly compared with the pneumatic pressure of the aforementioned transfer field.
[Claim 13] A means to maintain the pneumatic pressure of the aforementioned process field highly is a microelectronics manufacturing system according to claim 11 characterized by making the air from the aforementioned working area flow to the aforementioned transfer field and the aforementioned process field by maintaining the pneumatic pressure of the aforementioned process field highly as compared with the pneumatic pressure of the aforementioned transfer field.
[Claim 14] The microelectronics manufacturing system according to claim 10 characterized by having further a means to maintain the pneumatic pressure of the aforementioned working area highly as compared with the pneumatic pressure of the aforementioned service field.
[Claim 15] The up plenum connected with the aforementioned working area and the aforementioned service field, The lower plenum into which it connects with the aforementioned working area and the aforementioned service field, and the air from the aforementioned up plenum flows through the aforementioned working area and the aforementioned service field, As compared with the air flow rate from the aforementioned up plenum in the aforementioned service field to the aforementioned lower plenum, the air flow rate from the aforementioned up plenum in the aforementioned working area to the aforementioned lower plenum by increasing The microelectronics manufacturing system according to

claim 10 characterized by having further a means to maintain the pneumatic pressure of the aforementioned working area highly compared with the pneumatic pressure of the aforementioned service field.
[Claim 16] The microelectronics manufacturing system according to claim 9 characterized by discharging the air of the aforementioned transfer field to the aforementioned working area in order to have further the working area connected with the aforementioned service field and the aforementioned transfer field and to improve a particle flow to the aforementioned working area from the aforementioned transfer field.
[Claim 17] The microelectronics manufacturing system according to claim 9 characterized by providing the following. The working area connected with the aforementioned service field. The up plenum connected with the aforementioned working area and the aforementioned service field. The lower plenum into which it connects with the aforementioned working area and the aforementioned service field, and the air from the aforementioned up plenum flows through the aforementioned working area and the aforementioned service field. A means to discharge the air from the aforementioned transfer field to the aforementioned lower plenum in order to improve a particle flow from the aforementioned transfer field.
[Claim 18] The microelectronics manufacturing system are the microelectronics manufacturing system which it has in a service field, the process field where it is prepared in the aforementioned service field, and the process of the microelectronics element is carried out, and the transfer field which is established in the aforementioned service field and transport a wafer to the aforementioned process field, and carry out having the air regulator maintain the pneumatic pressure of the aforementioned process field highly as compared with the pneumatic pressure of the aforementioned transfer field in order to reduce a particle flow to the aforementioned process field from the aforementioned transfer field as the
[Claim 19] It is the microelectronics manufacturing system according to claim 18 which is further equipped with the working area connected with the aforementioned service field and the aforementioned transfer field, and is characterized by the aforementioned air regulator maintaining the pneumatic pressure of the aforementioned transfer field still more highly compared with the pneumatic pressure of a working area.
[Claim 20] The aforementioned air regulator is a microelectronics manufacturing system according to claim 18 or 19 characterized by improving a particle flow to the aforementioned service field of the outside of the aforementioned process field from the aforementioned working area by maintaining the pneumatic pressure of the aforementioned process field highly as compared with the pneumatic pressure of the aforementioned service field of the outside of the aforementioned process field.
[Claim 21] It is the microelectronics manufacturing system according to claim 18 characterized by having further the working area connected with the aforementioned service field, and for the aforementioned air regulator making the air from the aforementioned working area flow to the aforementioned transfer field and the aforementioned process field, and maintaining the pneumatic pressure of the aforementioned process field highly as compared with the pneumatic pressure of the aforementioned transfer field.
[Claim 22] The aforementioned air regulator is a microelectronics manufacturing system according to claim 20 characterized by making the air from the aforementioned working area flow to the aforementioned transfer field and the aforementioned process field, and maintaining the pneumatic pressure of the aforementioned process field highly compared with the pneumatic pressure of the aforementioned transfer field.
[Claim 23] The aforementioned air regulator is a microelectronics manufacturing system according to claim 19 characterized by maintaining the pneumatic pressure of the aforementioned working area highly as compared with the aforementioned service field.
[Claim 24] It is the microelectronics manufacturing system according to claim 23 which is equipped with the following and characterized by guiding the aforementioned air regulator as compared with the air flow rate from the aforementioned up plenum in the aforementioned service field to the aforementioned lower plenum so that the air flow rate from the.aforementioned up plenum in the

aforementioned working area to the aforementioned lower plenum may increase. The aforementioned air regulator is an up plenum connected with the aforementioned working area and the aforementioned service field. The lower plenum into which it connects with the aforementioned working area and the aforementioned service field, and the air from the aforementioned up plenum flows through the aforementioned working area and the aforementioned service field.

[Claim 25] It is the microelectronics manufacturing system according to claim 18 characterized by having further the working area connected with the aforementioned service field and the aforementioned transfer field, and for the aforementioned air regulator discharging the air from the aforementioned transfer field to the aforementioned working area, and improving a particle flow to a working area from the aforementioned transfer field.

[Claim 26] It is the microelectronics manufacturing system according to claim 18 which is equipped with the following, and the aforementioned air regulator discharges the air from the aforementioned transfer field to the aforementioned lower plenum, and is characterized by improving a particle flow from the aforementioned transfer field. It is the up plenum which is the microelectronics manufacturing system further equipped with the working area connected with the aforementioned service field and by which the aforementioned air regulator is connected with the aforementioned working area and the aforementioned service field. The lower plenum into which it connects with the aforementioned working area and the aforementioned service field, and the air from the aforementioned up plenum flows through the aforementioned working area and the aforementioned service field.

[Claim 27] The cleaning method of the microelectronics manufacturing system characterized by providing the following. (a) The stage of making the service field which pure air is made flowing from an up plenum to a lower plenum, and is located between the aforementioned up plenum and the aforementioned lower plenum passing pure air by the 1st pressure. (b) The stage of making the working area which adjoined the service field which pure air is made flowing from the aforementioned up plenum to the aforementioned lower plenum, and is located between the aforementioned up plenum and the aforementioned lower plenum passing pure air by the 2nd pressure higher than the 1st pressure of the above. (c) The stage of supplying pure air to the wafer transfer field which is prepared between the aforementioned service field and the aforementioned working area, and is connected with the aforementioned working area, and the wafer process field connected with a row to the aforementioned wafer transfer field, and maintaining the pressure of the aforementioned wafer process field more highly than the pressure of the aforementioned wafer transfer field. (d) The stage of making the pure air of the aforementioned wafer transfer field flowing to the aforementioned working area or the aforementioned lower plenum.

[Claim 28] The cleaning method of the microelectronics manufacturing system according to claim 27 characterized by providing the following. The aforementioned (c) stage is a stage where pure air is supplied to the aforementioned lower plenum or the aforementioned service field, and a row from the aforementioned working area. The stage which purifies the secondary supplied pure air, and the stage which supplies the air purified the 2nd order to the aforementioned wafer process field and the aforementioned wafer transfer field, respectively, and supplies a lot of pure air to the aforementioned wafer process field as compared with the aforementioned wafer transfer field.

[Claim 29] the [which inhales pure air through the 1st path and the 2nd path in_which of the aforementioned (c) stage became independent / the 1st inhalation stage and] -- the [2 inhalation stages, the 1st inhalation stage, and] -- pass 2 inhalation stages -- the inhaled pure air -- each -- the [the 1st regulation stage adjusted physically and/or chemically and] -- the cleaning method of the microelectronics manufacturing system according to claim 27 or 28 characterized by to include 2 regulation stages

[Claim 30] It is the cleaning method of the microelectronics manufacturing system according to claim 29 characterized by supplying the air adjusted according to the aforementioned 1st regulation stage to the aforementioned wafer process field and the aforementioned wafer transfer field, respectively, and making the air adjusted according to the aforementioned 2nd regulation stage supply only to the aforementioned wafer process field.

[Claim 31] The pure air which the aforementioned 1st regulation stage adjusted air physically and chemically, and the aforementioned 2nd regulation stage adjusted air physically or chemically, and was adjusted in the aforementioned 2nd regulation stage is the cleaning method of the microelectronics manufacturing system according to claim 29 characterized by going via the aforementioned 1st regulation stage through the 1st path of the above.
[Claim 32] The cleaning method of the microelectronics manufacturing system according to claim 27 or 28 characterized by maintaining the pressure of the aforementioned wafer transfer field more highly than the pressure of the aforementioned working area, and making the pure air from the aforementioned wafer transfer field flow to the aforementioned working area by the pressure differential.
[Claim 33] The cleaning method of the microelectronics manufacturing system according to claim 27 or 28 characterized by connecting the aforementioned wafer transfer field with the aforementioned lower plenum which maintains the minimum pressure directly, and discharging the pure air of the aforementioned wafer transfer field directly to the aforementioned lower plenum by the pressure differential of the aforementioned wafer transfer field and the aforementioned lower plenum.
[Claim 34] The cleaning method of the microelectronics manufacturing system according to claim 27 or 28 characterized by preparing a compulsory ventilation means in the boundary of the aforementioned wafer transfer field and a working area, and discharging the pure air of the aforementioned wafer transfer field to the aforementioned working area by the aforementioned ventilation means.
[Claim 35] The microelectronics manufacturing system characterized by providing the following. The working area and service field by which were prepared between the up plenum and the lower plenum and the mutual partition was carried out spatially. The wafer transfer field which adjoins the aforementioned working area and is established in the aforementioned service field. The wafer process field contiguous to the aforementioned wafer transfer field. Air supply equipment with which pure air is supplied to the aforementioned wafer process field and the aforementioned wafer transfer field, and the aforementioned wafer process field maintains the high-pressure force as compared with the aforementioned wafer transfer field.
[Claim 36] The aforementioned air supply equipment is a microelectronics manufacturing system according to claim 35 characterized by having the 1st air supply equipment which supplies air to the aforementioned wafer process field and the aforementioned wafer transfer field, and the 2nd air supply equipment which supplies air only to the aforementioned wafer process field.
[Claim 37] The aforementioned air supply equipment is a microelectronics manufacturing system according to claim 35 characterized by supplying air to targets, such as a difference, to the aforementioned wafer transfer field and the aforementioned wafer process field, and maintaining the pressure of the aforementioned wafer transfer field more highly than the pressure of the aforementioned working area.
[Claim 38] The aforementioned wafer transfer field is a microelectronics manufacturing system according to claim 35 characterized by predetermined air moving trucking connecting with the aforementioned lower plenum directly spatially.
[Claim 39] The microelectronics manufacturing system of the claim 35-37 characterized by having the air exhaust which discharges the air from the aforementioned wafer transfer field to the aforementioned working area between the aforementioned wafer transfer field and the aforementioned working area given in any 1 term.
[Claim 40] The aforementioned air supply equipment is a microelectronics manufacturing system according to claim 35 characterized by having the 1st air supply equipment which supplies air to the aforementioned wafer process field and the aforementioned wafer transfer field, and the 2nd air supply equipment which supplies air to the aforementioned 1st air supply equipment at a row.
[Claim 41] The microelectronics manufacturing system characterized by providing the following. The working area and service field which are prepared between the up plenum and the lower plenum. The wafer transfer field which adjoins the aforementioned working area and is established in the aforementioned service field. The wafer stage field which exposure to a wafer is performed and is connected with the aforementioned wafer transfer field. Air supply equipment with which pure air is

supplied to the reticle-stage field which supplies the reticle used for exposure in the aforementioned wafer stage field, and the aforementioned wafer stage field and the aforementioned wafer transfer field, and the aforementioned wafer stage field maintains in the high-pressure force as compared with the aforementioned wafer transfer field, and the aforementioned wafer transfer field maintains the high-pressure force as compared with the aforementioned working area.
[Claim 42] It is the microelectronics manufacturing system according to claim 41 which it has further the wafer gate through which a wafer passes between the aforementioned wafer stage field and the aforementioned wafer transfer field, and the aforementioned wafer gate intercepts the light by which incidence is carried out, and is characterized by air having the passing louver.
[Claim 43] The aforementioned air supply equipment is a microelectronics manufacturing system according to claim 41 or 42 characterized by having the 1st air supply equipment which supplies air to the aforementioned wafer stage field and the aforementioned wafer transfer field, and the 2nd air supply equipment which supplies air to the aforementioned 1st air supply equipment at a row.
[Claim 44] The aforementioned wafer transfer field is a microelectronics manufacturing system according to claim 41 or 42 characterized by the predetermined air discharge path connecting with the aforementioned lower plenum directly.
[Claim 45] The boat stage where ** arrival of the boat which carried the wafer in the aforementioned wafer transfer field is carried out, ******** by which it is adjoined and prepared in the aforementioned boat stage, and ****** to which ** arrival of the one wafer taken out from the aforementioned boat stage is carried out is prepared in the upper case section, The wafer lifter which has the fuselage which supplies power to a row at the aforementioned ********, With the 1st wafer transfer robot which adjoins the aforementioned wafer lifter in the aforementioned wafer transfer field, is formed, and transports the aforementioned wafer between the aforementioned boat and the aforementioned ****** of the aforementioned wafer lifter With the 2nd wafer transfer robot which is adjoined and formed in the aforementioned wafer stage field, and transports the aforementioned wafer between the aforementioned ****** of the aforementioned wafer lifter, and the aforementioned wafer stage field The microelectronics manufacturing system according to claim 41 or 42 characterized by ** and also having.

[Claim 46] It is the microelectronics manufacturing system according to claim 45 characterized by the particle which the aforementioned fuselage of the aforementioned wafer lifter was held in the case of predetermined capacity, and the building envelope of the aforementioned case was connected with the external source of a vacuum, and was generated from the aforementioned fuselage of the aforementioned wafer lift being discharged by the aforementioned source of a vacuum.
[Claim 47] The aforementioned air supply equipment is a microelectronics manufacturing system according to claim 41 characterized by supplying air to targets, such as a difference, to the aforementioned wafer transfer field and the aforementioned wafer process field, and maintaining the pressure of the aforementioned wafer transfer field more highly than the pressure of the aforementioned working area.
[Claim 48] The microelectronics manufacturing system according to claim 41 characterized by preparing the air exhaust which discharges the air from the aforementioned wafer transfer field to the aforementioned working area between the aforementioned wafer transfer field and the aforementioned working area.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to the microelectronics manufacturing system which used the cleaning method of a microelectronics manufacturing system, and this.
[0002]
[Description of the Prior Art] A microelectronics manufacturing system is extensively used for the method of manufacturing a microelectronics element like a microelectronics wafer, an integrated circuit, and a liquid crystal display panel. The environment of a microelectronics manufacturing process should be maintained by the high pure state in order to obtain the high yield of a microelectronics element. Generally, since the degree of integration of a microelectronics element increases further, high cleanliness should be secured.
[0003] The unit-process area where the specific process over a microelectronics element is made carries out loading of the wafer to the wafer process field where the predetermined work to a wafer is generally made, and a wafer process field, or possesses the wafer transfer field for carrying out unloading of this. The unit-process area is located in the service field of a microelectronics manufacturing system.
[0004] The unit-process area is in contact with the working area called so-called bay ba. If the boat by which the wafer was carried from the working area is ****(ed) by the wafer transfer field by the operator, the robot in a wafer transfer field will do loading of every one wafer to a wafer process field from a boat. Moreover, the robot of a wafer transfer field does the work which carries out unloading of the wafer with which the consecutiveness process was completed from a wafer process field.
[0005] Drawing 1 and drawing 2 are the plans and elevations of a general microelectronics manufacturing system. In drawing 1 and drawing 2 , a sign 1 is the clean room of the exterior and the isolated pure area, and includes a working area 10 and the service field 20. In this clean room 1, temperature and humidity are adjusted and the pure air from which particle was removed flows downward.
[0006] The up plenum 2 which supplies the adjusted pure air to the upper part of a clean room 1, and the lower plenum 3 which collects the air which passed through the clean room 1 in the lower part are located. The pure air supplied from the up plenum 2 passes through the backward working area 10 which passed the filter, and the service field 20. The very fine particle generated from the working area 10 and the service field 20 is discharged through the lower plenum 3 which maintains low voltage with pure air.
[0007] A clean room 1 maintains a high pressure compared with the atmosphere, and the airstream close from the outside does not happen. Moreover, compared with the service field 20, the atmospheric pressure of a working area 10 is adjusted highly. This is for not making the very fine particle generated from the service field flow into the working area 10 of a wafer move field by the pressure differential. Such a pressure differential is obtained by adjusting the amount and/or speed of pure air which flow a working area 10 and the service field 20.

[0008] The arrow of drawing 2 shows the move direction of pure air. The vertical plenums 2 and 3 of a clean room 1 are isolated by filter 2a which removes the particle in air, and diffraction-grating 3a which has puncturing which air passes. The amount of flow of the pure air of a working area 10 and the service field 20 is adjusted with the number of puncturing generally formed in the size of filter 2a, the number of diffraction-grating 3a, or this, and it deals in it.
[0009] As mentioned above, in order that a working area 10 may have many airstream mechanical moments and may maintain a high pressure compared with the service field 20, an air flow to the service field 20 from a working area 10 occurs. An air flow between a working area 10 and the service field 20 is accomplished through the wall 4 which isolates a working area 10 and the service field 20.
[0010] The wall 4 prepared between the working area 10 and the service field 20 consists of whether an air flow can be carried out and a member of a large number in which it becomes and big gap 4a exists between them. Therefore, the phenomenon in which a part of pure air which had passed the working area 10 flows to the service field 20 through gap 4a of a wall 4 in a clean room 1 occurs automatically. A flow of air is made in a wafer also between loading / wafer transfer field 32 for carrying out unloading to the wafer process field 31 where predetermined processing to a wafer is made, and the wafer process field 31.
[0011] Between the wafer transfer field 32 and the working area 10, it has opening or boat gate 4b the boat by which many wafers were carried carries out [b] advance close. Between the wafer process field 31 and the wafer transfer field 32, it has opening or wafer gate 32a a wafer carries out [a] advance close. Gates 4b and 32a are respectively equipped with the door which opens and closes these, and the gap which can carry out an air flow exists in the surroundings of the door of these gates 4b and 32a.
[0012] According to such structure, an air flow occurs from the interior of the process field 30. Especially, pure air flows into the wafer transfer field 32 from a working area 10 to the high-pressure working area 10 through opening of the gap of boat gate 4b, or the other process fields 30. And the air which flowed into the wafer transfer field 32 permeates the wafer process field 31 through wafer gate 32a again. And the pure air which flowed into the wafer process field 31 is discharged by the service field 20 through opening or gap 31a which exists in the surroundings of the wafer process field 31. Thus, an air flow in the interior of process equipment 30 is generated by the pressure differential of a working area 10 and the service field 20.
[0013] As shown in drawing 3 , the air supply equipment 50 for supplying the pure air purified by the wafer process field 31 and the wafer transfer field 32 is added to process equipment 30. As shown in drawing 3 , after air supply equipment 50 attracts pure air from a working area 10 through an inhalant canal 51 and purifies this physically and/or chemically, as arrows 52 and 53 showed respectively, it is supplied to the wafer process field 31 and the wafer transfer field 32. On the other hand, air supply equipment 50 is formed in the lower plenum 3 so that air may be flowed from the lower plenum 3, without flowing air from a working area 10.
[0014] A flow of the air in the wafer process field 31 and the wafer transfer field 32 to which pure air is supplied by air supply equipment 50 is made in the direction which adapts itself to an air flow to the service field 20 of the low voltage force from the working area 10 of the high-pressure force. Therefore, while the air purified by air supply equipment 50 is supplied to the wafer transfer field 32 and the wafer process field 31 like explanation of drawing 2 , air flows into the wafer transfer field 32 from the working area 10 of the high-pressure force through boat gate 4b. And air permeates the wafer process field 31 from the wafer transfer field 32 through wafer gate 32a. The pure air which flowed into the wafer process field 31 is discharged by the service field 20 through opening or gap 31a which exists in the surroundings of the wafer process field 31.
[0015] In spite of the remedy of the equipment and the method of cleaning such a microelectronics manufacturing system, and others, the equipment for improving cleaning of a microelectronics manufacturing system further and a demand of a method continue.
[0016]
[Problem(s) to be Solved by the Invention] The purpose of this invention is to offer the equipment which applied the cleaning method of a microelectronics manufacturing system and this according to such a

demand.
[0017] The purpose of this invention is to offer the equipment which applied the cleaning method of a microelectronics manufacturing system and this which can reduce contamination of microelectronics equipment.
[0018] The purpose of this invention is to offer the equipment which applied the cleaning method of a microelectronics manufacturing system and this in which the yield of a microelectronics element is raised and it deals.
[0019]
[Means for Solving the Problem] The above-mentioned purpose is that to which the process of a service field and the microelectronics element is carried out according to this invention. The process field with which a service field is equipped, and a microelectronics element to a process field And the microelectronics manufacturing system possessing the transfer field with which is transported from a process field and a service field is equipped, It is attained by maintaining the high-pressure force in a process field compared with a transfer field, and reducing a particle flow to a professional wrestling field from a transfer field.
[0020] According to this invention, it became clear for the backflooding of the air to a wafer process field to be permitted, and to deal in a conventional microelectronics manufacturing system and this conventional cleaning method. By permitting the backflooding of the air to a wafer process field, a flow of the air to the place where a high pure state should be maintained may take place from the place where a low pure state is maintained. From a process field, the particle which is generated by the concrete supply system by the backflooding of air, and is contained to the transfer field flows on the wafer with which the process is made, and gets. this invention can remove a flow of the particle from a transfer field to a process field to reduction and completeness by contrasting extremely and maintaining the pressure of a process field highly compared with a transfer field.
[0021] According to other types of this invention, a microelectronics manufacturing system possesses further the working area connected with a service field and a transfer field. Compared with a working area, a transfer field can maintain the high-pressure force, and, thereby, a flow of the particle from a transfer field to a working area can be improved. Furthermore, high pneumatic pressure increases a particle flow to the service field of the outside of a process field to a process field. In order to maintain the pressure of a process field highly compared with a transfer field, a flow to a transfer field from a working area is generated, and it deals in air. From a transfer field, air is discharged by the working area, and it deals in it, and it can increase a flow of the particle from a transfer field to a working area by this. From a transfer field, air is discharged by the lower plenum, it deals in it, and a particle flow from a transfer field is increased by this.
[0022]
[Embodiments of the Invention] this invention is explained more to a detail, referring to the related drawing in which the desirable example of this invention is shown hereafter. It is made to spread this invention, it is not restricted to the example explained here, but can apply to many other types, this example is provided with this indication thoroughness and in order to make it perfect, and those who have the knowledge of this industry should fully understand the range of this invention. The size of a field is intelligibly expanded with the drawing.
[0023] Before explaining this invention, with reference to drawing 3 and drawing 4 , it explains to the backflooding which the conventional semiconductor fabrication machines and equipment do not wish. There is a possibility that adverse current close [of the air which passed through the wafer transfer field 32] may be carried out to the wafer process field 31 with the air flow structure shown in drawing 3 . It means that the air from the space where low cleanliness is maintained relatively [space / where high cleanliness should be maintained relatively] flows as the adverse current close here. Then, although the air from the wafer transfer field 32 to the wafer process field 31 where severe cleanliness is demanded flows, this is an example of the backflooding of air. According to such backflooding, a wafer while a predetermined process is advancing adheres to the particle contained in pure air, and it gets.
[0024] Drawing 4 shows the conventional microelectronics manufacturing system which the adverse

current close of pure air generates as mentioned above. The up plenum 2 and the lower plenum 3 are located in the upper and lower sides of the clean room 1 where the service field 20 and the working area 10 are divided by the wall 4. Between the aforementioned clean room 1 and the up plenum 2, it has panel 2b in which air-filter 2a was prepared. Air-filter 2a on a working area 10 is thick compared with the air filter of the service field 20 top, and many air flow is adjusted. Diffraction-grating 3a applicable to the bottom of a clean room 1 is supported by pillar 3b prepared in the lower plenum 3.

[0025] An aligner 130 possesses the wafer transfer field 132 and the wafer process field 131. The wafer transfer field 132 adjoins the working area 10. The boat gate 133 through which the boat 90 by which the wafer was carried passes is located between the wafer transfer field 132 and a working area 10. The wafer gate 134 through which a wafer passes is located between the wafer transfer field 132 and the wafer process field 131. A wafer is picked out in the wafer transfer field 132 from a boat 90, and the robot 80 which does loading of this to the wafer process field 131 through the wafer gate 134 is formed in it. A robot 80 carries out the unloading work to which a wafer [finishing / a process] is again returned to a boat 90 with loading of a wafer. Exposure by the reticle is carried out in the wafer process field 131. A reticle is supplied from the reticle stage with which the upper part of the wafer process field 131 was generally equipped and which is not illustrated. The air supply equipment which supplies the purified air to the wafer transfer field 132 and the wafer process field 131 and which is not illustrated is installed separately by the aligner 130. After air supply equipment inhales pure air from the upper part of the working area 10 near the up plenum 2 and filters the inhaled air physically and/or chemically, it is supplied to the wafer process field 131, the wafer transfer field 132, and a reticle-stage field. This can prevent that prevent local stay of pure air to a field, and particle is accumulated in each field.

[0026] An arrow shows the flow direction of the pure air in a clean room 1 by drawing 4 . A part of pure air flows into the wafer process field 131 which passed through the wafer transfer field 132 from a working area 10. The pure air of the wafer process field 131 flows to the service field 20 through the gap or opening which exists in the circumference of the wafer process field 131. Moreover, air is directly supplied to each fields 131 and 132 by the air supply equipment mentioned above.

[0027] The element which generates many particle exists in the wafer transfer field 132. For example, the robot 80 has loading / arm for carrying out unloading for the wafer. A robot's 80 arm contains two or more dynamic elements for performing a vertical motion and a class leveling movement complexly. A lot of metallicity particle than this is generated by friction between the dynamic elements of a robot's 80 arm. Both the particle generated here has a possibility that the wafer flowed and exposed to the wafer process field 131 along with the flow of pure air may adhere. The particle which adhered to the wafer drops the yield of a product.

[0028] Thus, the problem according to the backflooding of the particle generated from the wafer transfer field may be generated from other semiconductor manufacturing processes in addition to an exposure process which was mentioned above. Since a microelectronics element is integrated further highly, yield falls off further.

[0029] Drawing 5 - drawing 7 show the flow of the pure air by the air regulator according to the microelectronics manufacturing system and this cleaning method of this invention. An arrow shows the flow of air with a drawing.

[0030] As shown in drawing 5 , the pure air purified the 1st order from the up plenum 200 passes through the working area 110 and the service field 120 which were divided by the wall 104 respectively, and reaches the lower plenum 300.

[0031] Pure air is supplied to the wafer process field 131 and the wafer transfer field 132 by the air supply equipment 500 which purifies the secondary pure air from a working area 110. There are more amounts of air supply to the wafer process field 131 than the amount of air supply to the wafer transfer field 131. Therefore, compared with the wafer transfer field 132, the wafer process field 131 maintains the high-pressure force relatively. Moreover, the pressure of the wafer transfer field 132 maintains the high-pressure force from a working area 110.

[0032] Therefore, the pure air supplied to the wafer process field 131 flows to the service field 120 and the wafer transfer field 132, and the air of the wafer transfer field 132 flows to a working area 110. Air

supply equipment 500 inhales air from a working area 110, purifies this, and supplies the purified air to the wafer process field 131 and the wafer transfer field 132. The air inhaled by air supply equipment 500 depending on the case is offered from the lower plenum 300, and air supply equipment 500 the very thing is located in the lower plenum 300. It can be increased by the number of the elements or fields to which the air purified the 2nd order by air supply equipment 500 is supplied according to the structure the process equipment supplied.

[0033] An air flow with the wafer transfer field 132 and a working area 110 The gap of the circumference of a door prepared in boat gate 114b or boat gate 114b in which the boat by which many wafers were carried carries out advance close, It is made through the air flow path which it has apart from boat gate 114b for air circulation. or an air flow with the wafer process field 131 and the wafer transfer field 132 A wafer is made through opening which it had for air circulation apart from the gap of the circumference of a door with which wafer gate 132a or wafer gate 132a which carries out advance close is equipped, or wafer gate 132a. An air flow with the wafer process field 131 and the service field 120 is made by opening 131a which it had for the gap which exists in the circumference of the process field 131, or air circulation.

[0034] According to the flow structure of the above pure air, the cleanliness of the wafer process field 131 is maintained very highly compared with other fields. In order that the pure air purified the 2nd order from air supply equipment 500 may be supplied to the wafer process field 131 and the wafer process field 131 may maintain the high-pressure force compared with the service field 120 and the wafer transfer field 132, pure air does not carry out backflooding into the wafer process field 131 from the service field 120 and the wafer transfer field 132. The particle especially generated from the interior of the wafer process field 131 is discharged by the service field 120 and the wafer transfer field 132 according to the high-pressure force of the wafer process field 131. Moreover, the robot is formed and the air of the wafer transfer field 132 which a lot of particle than this generates is immediately discharged by the working area 110.

[0035] Drawing 6 shows the air exhaust 600 which it had between the wafer transfer fields 132 and working areas 110 which were shown in drawing 5 . The air exhaust 600 carries out the forced discharge of the air of the wafer transfer field 132 to a working area 110. The air exhaust 600 is not so large as the pressure differential of the wafer transfer field 132 and a working area 110 can discharge the air of the wafer transfer field 132 to a working area 110, or when a backflooding phenomenon may occur, it is applied. However, the pressure of the wafer process field 131 must be higher than the pressure of the wafer transfer field 132 in this case.

[0036] The service field 120 and the wafer transfer field 132 which maintain a low pressure relatively distribute, and the pure air supplied to the wafer process field 131 flows. The air of the wafer transfer field 132 is discharged by the working area 110 with forced-discharge equipment 600. The pure air which flowed from the working area 110 through the gap of the circumference of a door with which boat gate 114b which it has between the wafer transfer field 132 and a working area 110, or this is equipped is also again discharged by the working area 110 with forced-discharge equipment 600.

[0037] Air supply equipment 500 supplies this to the wafer process field 131 and the wafer transfer field 132, after inhaling and purifying air from a working area 110. The air inhaled by air supply equipment 500 is offered from the lower plenum 300, and it deals in it, and air supply equipment 500 the very thing is located in the lower plenum 300. And it can be increased by the number of the elements or fields to which the air purified the 2nd order by air supply equipment 500 is supplied according to the process equipment structure supplied. Air supply equipment 500 is applied like other following examples, and it deals in it.

[0038] Drawing 7 shows other examples of the air discharge structure from the wafer transfer field 132 where the air discharge path 700 is directly connected with the wafer transfer field 132 and the lower plenum 300. The lower plenum 300 collects all the pure air that passed through the working area 110 and the service field 120, and is maintaining the very low pressure. Therefore, since the pressure higher than the lower plenum 300 directly connected by the air discharge path 700 is maintained even if the wafer transfer field 132 maintains a pressure lower than the wafer process field 131, the air of the wafer

transfer field 132 flows promptly to the lower plenum 300. The air discharge path 700 is offered by tubular member and plate-like part material and/or other members.
[0039] The service field 120 and the wafer transfer field 132 which maintain a low pressure relatively distribute, and the pure air supplied to the wafer process field 131 flows. The pure air of the wafer transfer field 132 is discharged by the lower plenum 300 through the air discharge path 700. The pure air which flowed from the working area 110 through the gap of the circumference of a door with which boat gate 114b which it has between the wafer transfer field 132 and a working area 110, or this is equipped is also discharged by the lower plenum 300 through the air discharge path 700.
[0040] Drawing 8 and drawing 9 supply pure air to the wafer process field 131 and the wafer transfer field 132, and show the air supply means divided into two air supply equipments. If drawing 8 is referred to, the 1st air supply equipment 501 will supply the pure air purified the 2nd order to the wafer process field 131 and the wafer transfer field 132. The 1st air supply equipment 501 inhales pure air from the upper part side of a working area 110. By the case, from the lower plenum 300 and/or the service field 120, the 1st air supply equipment 501 inhales pure air, and purifies it the 2nd order. The 2nd air supply equipment 502 supplies pure air only to the wafer process field 131 to which the highest cleanliness should be maintained. The 2nd air supply equipment 502 also inhales pure air from a working area 110. By the case, from the lower plenum 300 and/or the service field 120, the 2nd air supply equipment 502 inhales pure air, and purifies it the 2nd order.
[0041] If drawing 9 is referred to, both the 1st air supply equipments 501 will supply the pure air purified the 2nd order to the wafer process field 131 and the wafer transfer field 132. The 1st air supply equipment 501 inhales pure air from the upper part side of a working area 110, depending on the case, from the lower plenum 300 and/or the service field 120, inhales pure air and purifies it the 2nd order. The 2nd air supply equipment 502 supplies the air purified the 2nd order to the 1st air supply equipment 501. The 2nd air supply equipment 502 also inhales pure air from a working area 110. By the case, from the lower plenum 300 and/or the service field 120, the 2nd air supply equipment 502 inhales pure air, and purifies it the 2nd order.
[0042] As shown in drawing 8 and drawing 9 , the service field 120 and the wafer transfer field 132 which maintain a low pressure relatively distribute, and the pure air poured into the wafer process field 131 flows. Similarly, the pure air of the wafer transfer field 132 is discharged by the working area 110 through 114d of air exhaust ports. Drawing 8 and drawing 9 show the state where boat gate 114b was closed by door 114c, and show the state where eccrisis of pure air takes place through 114d of air exhaust ports of the lower part. Generally a door is prepared not only in boat gate 114b but in wafer gate 132a, and it has opening to which air can circulate at the door itself, and it gets.
[0043] By the ability not supplying the 2nd order pure air of an amount enough with one air supply equipment, the air supply structure of the gestalt shown in drawing 8 and drawing 9 can apply the pressure of the wafer process field 131, when it cannot go up so that it may have the difference of the grade of hope to the wafer transfer field 132. furthermore, it accumulates, and such air supply structure has the desirable thing for which it has the oscillating-component powder effect and which is applied at the time of the wafer exposure field where the wafer process field 131 is very sensitive to vibration, and it can apply it to the microelectronics manufacturing system shown in drawing 5 - drawing 7
[0044] Drawing 10 shows the rough structure of a microelectronics manufacturing system of having pure air flow structure as shown in drawing 7 . If drawing 10 is referred to, the up plenum 200 and the lower plenum 300 are located in the upper and lower sides of the clean room 100 where the service field 120 and the working area 110 are divided by the wall 104. Between the clean room 100 and the up plenum 200, it has the blind panel 202 by which the air filter 201 was formed. The diffraction grating 103 applicable to the bottom of a clean room 100 is supported with the pillar 301 prepared in the lower plenum 300.
[0045] An aligner 130 possesses the wafer transfer field 132 and the wafer process field 131. The wafer transfer field 132 adjoins a working area 110, it has the boat gate 133 through which the boat 90 by which the wafer was carried between the wafer transfer field 132 and the working area 110 passes, and door 133a which opens and closes this is prepared in the boat gate 133. A wafer is picked out in the

wafer transfer field 132 from a boat 90, and the robot 80 which does loading of this to the wafer process field 131 through the wafer gate 134 is formed in it. A robot 80 carries out the unloading work to which a wafer [finishing / work] is again returned to a boat 90 with loading of a wafer.
[0046] Exposure by the reticle is carried out in the wafer process field 131. A reticle is supplied from the reticle stage mentioned later. The air supply equipment which is not illustrated supplies pure air to the wafer transfer field 132 and the wafer process field 131. After air supply equipment inhales pure air from the upper part of the working area 110 near an up plenum, it filters this physically and/or chemically and supplies this to the wafer process field 131 and the wafer transfer field 132. Further much pure air is supplied to the wafer process field 131 by this invention, and the pressure of the wafer process field 131 is highly maintained by it compared with the pressure of the wafer transfer field 132.
[0047] In the wafer transfer field 132, the air eccrisis path 700 of the gestalt mentioned by explanation of drawing 7 connects the lower plenum 300 with the wafer transfer field 132 directly. The air eccrisis path 700 with which the lower part of the wafer transfer field 132 was equipped is carrying out the position soon at the diffraction grating 103. As mentioned above, the lower plenum 300 collects all the pure air that passed through the working area 110 and the service field 120, and is maintaining the low pressure very much. Therefore, since the wafer transfer field 132 which is maintaining the considerably high pressure is directly linked with the lower plenum 300, the air of the wafer transfer field 132 flows promptly to the lower plenum 300.
[0048] An arrow shows the flow direction of the pure air in a clean room 100 by drawing 10 . The pure air from the wafer process field 131 flows to the service field 120 and the wafer transfer field 132 through opening and/or the wafer gate 134 which were formed in the circumference of the wafer process field 131. The pure air to the wafer transfer field 132 flows also from the wafer process field 131 to the working area 110. The pure air which flowed into the wafer transfer field 132 is discharged through the air eccrisis path 700 by the lower plenum 300 which maintains a low pressure very much.
[0049] Therefore, the high cleanliness which the wafer process field 131 wishes is maintained, and contamination of the wafer by particle is prevented. In other words, it is prevented by maintaining the pressure of the wafer process field 131 highly compared with the pressure of the wafer transfer field 132 that the particle generated from the wafer transfer field 132 flows into the wafer process field 131. The pure air of the wafer transfer field 132 which a lot of particle generates especially does not flow not only into the wafer process field 131 but into the working area 110, but is immediately discharged by the lower plenum 300, and contamination of the clean room 100 by the particle generated from the wafer transfer field 132 is prevented effectively. In the microelectronics aligner of the above structures, it can have forced-discharge equipment of structure as shown in drawing 6 between the wafer transfer field 132 and a working area 110.
[0050] If drawing 11 is referred to, the upper part side of the wall 104 which has isolated the wafer transfer field 132 and the working area 110 is equipped with the boat gate 133 which has door 133a, and ventilation equipment 601 is combined inside the lower part. Many breakthroughs 111 for air circulation are formed in the portion of the wall corresponding to ventilation equipment 601. Ventilation equipment 601 discharges compulsorily the particle contained in the air of the wafer transfer field 132, and this to a working area 110.
[0051] Drawing 12 and drawing 13 show roughly the whole aligner structure of two air supply equipments being applied as an air supply means, and getting. If drawing 12 is referred to, the wafer process field 131 and the wafer transfer field 132 are connected by the wafer gate 134 where it had door 134a, and exposure is equipped with the reticle-stage field 135 which offers a required reticle or a required mask on this. In the reticle-stage field 135, an exposure position is equipped with loading and the robot 138 which does unloading in two or more reticles 137 and aforementioned reticles 137 as a film for exposure.
[0052] Pure air is supplied to the wafer process field 131, the wafer transfer field 132, and the reticle-stage field 135 from the 1st air supply equipment 501. The 1st air supply equipment 501 separates the 2nd air supply equipment 502 and fixed distance, and is formed, and air is supplied to it from a working area 110, and it purifies this [secondary] physically and/or chemically inside. An aligner is prepared on

the independent vibrationproofing base 310 isolated to vibration etc. from the pars-basilaris-ossis-occipitalis material 320 of eye a sensitive hatchet and the service field 132.
[0053] The 2nd air supply equipment which adjoins the aligner inhales pure air from the lower plenum 300 or the service field 120, and supplies the pure air purified the 2nd order inside to the wafer process field 131.
[0054] According to the example shown in drawing 13 , the pure air purified the 2nd order with the 2nd air supply equipment 502 is supplied to the 1st air supply equipment 501. The 1st air supply equipment 501 supplies air to the wafer process field 131, the wafer transfer field 132, and the reticle-stage field 135. At this time, it has a chemical air cleaning function and, as for the 2nd feeder, it is desirable to make it that the 1st air supply equipment is physical and/or have a physical air cleaning function.
[0055] As shown in drawing 12 and drawing 13 , the lower plenum 300 side is equipped with the air distribution channel 116 which can carry out air circulation between the wafer transfer field 132 and the working area 110 closely. Therefore, in order for the air of the wafer transfer field 132 to be discharged by the working area 110 through the air distribution channel 116, the pressure of the wafer transfer field 132 should be high compared with the pressure of a working area 110. Moreover, the pressure of the wafer process field 131 should be higher than the wafer transfer field 132. Since the reticle-stage field 135 is equipped with the robot 138 of the cause of generating of particle, it is necessary to discharge particle to a working area 110. For this reason, it is desirable to make the pressure of the wafer stage field 135 higher than the pressure of a working area, and to make a working area 110 discharge the air of the wafer stage field 135 through the gap and other openings which exist around the reticle door 136.
[0056] As mentioned above, regulation of the amount of air supply by the 1st and the 2nd air supply equipments 501 and 502 can adjust the pressure differential between each above field.
[0057] By the experiment according to actual process conditions, the number of particle to which the aligner which has structure which starts a conventional aligner and a conventional this invention, and which was mentioned above adheres, especially the number of the particle in the wafer process field 131 were obtained, as shown in Table 1.
[0058]
[Table 1]

	サンプル1	サンプル2	サンプル3	サンプル4
従来の露光装置	53	25	38	29
本発明の露光装置	0	0	1	0

[0059] The experimental result of Table 1 is receiving a 5 inch wafer, and a numeric value shows the number of particle which has the size of 0.1 micrometers or more to which each sample wafer adhered. Such a result shows the serious nature of the wafer contamination according to the air backflooding from a wafer transfer field to a wafer process field. There was no consideration to air carrying out backflooding to a wafer process field from a wafer use field in the former, therefore the research of any positive solutions to air backflooding was not made.
[0060] Drawing 14 is the front view of door 134a for intercepting the inflow of outdoor daylight effectively, though smooth air circulation with a wafer process field and a wafer transfer field is aimed at in the aligner shown in drawing 12 and drawing 13 , and drawing 15 is the side elevation of drawing 14 .
[0061] If drawing 14 and drawing 15 are referred to, the wall 140 which isolates the wafer process field 131 and the wafer transfer field 132 is equipped with the wafer gate 134, and door 134a of the lot which opens and closes this is prepared in the wafer gate 134. Slit 134c for passage of a wafer is formed in door 134a. And while enabling circulation of air at the lower part side of each door 134a, louver 134b which intercepts the inflow of light is prepared. Louver 134b has the structure where 134d of a majority of two or more aperture grids to which the flat surface leans to the predetermined angle to the flat surface of door 134a is located in a line, and they are arranged. According to such structure, circulation

of the air to the direction to which the wafer process field 131 to the wafer transfer field 132 turned to caudad, and it inclined is possible, and the light from the wafer transfer field 132 is intercepted.
[0062] As shown in drawing 16 , by equipping 134d of aperture grids with the axis of rotation, and making a door support this free [rotation], the hand of cut of aperture grid 134c is followed, and circulation of air can approve or intercept.
[0063] Drawing 17 shows a part of aligner which has the structure for carrying out the maximum suppression of the particle generating in the wafer transfer field 132. As shown in drawing 17 , it has the boat stage 805 where ** arrival of the boat 806 carrying the wafer is carried out in the wafer transfer field 132. The boat stage 805 is adjoined and the wafer lifter 900 and the 1st wafer transfer robot 801 are located. The 1st wafer transfer robot 801 is formed on a rail 802, and has come to be able to carry out both-way movement through a rail 802. Contiguity installation is carried out at the wafer lifter 900, and the 1st wafer transfer robot 801 transports a wafer ****** 901 of the wafer lifter 900, and reversely [its] from the wafer boat 806. In the wafer stage field 131, the wafer stage field 131 and its 2nd wafer transfer robot 811 which transports on the contrary are located in the wafer located in ****** 901 of the wafer lifter 900.
[0064] The wafer lifter 900 has ******** 902 by which the upper case section was equipped with ****** 901 to which ** arrival of the one wafer is carried out, and the fuselage 904 which provides ******** 902 with power, as shown in drawing 18 . The fuselage 904 of a wafer lifter is held in the case 905 of predetermined capacity. The building envelope of a case 905 is connected with the external source 906 of a vacuum, and the particle generated from the fuselage of the wafer lifter 900 is discharged outside by the source of a vacuum.
[0065] Since the wafer lifter 900 of such structure is protected by the case 905, it is prevented that the particle generated from the fuselage 904 flows into the space of the wafer transfer field 132.
[0066]
[Effect of the Invention] As mentioned above, as explained, in order to prevent that air carries out backflooding to a wafer process field from a wafer transfer field, the pressure of the wafer process field where the predetermined process over a wafer is made is maintained more highly than the pressure of a wafer transfer field. The pressure differential between the fields maintained in order to prevent such air backflooding can be adjusted by the pure air content supplied to each. By making a working area or a lower plenum discharge desirably the pure air in the wafer transfer field which has a low pressure from the pressure of a wafer process field, the air stay in a wafer transfer field is prevented, and accumulation of the particle by air stay is prevented.
[0067] The cleaning method of the microelectronics manufacturing system concerning this invention which applies such a thing, and a microelectronics manufacturing system are applicable to many systems applied to manufacture of a microelectronics element in addition to the aligner explained concretely until now. According to this invention, as shown in Table 1, it is minimum-ized and adhesion of the particle to a wafer can increase yield, such as a microelectronics element, reduction or by removing this further.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the plan showing the layout of the conventional microelectronics manufacturing system.
[Drawing 2] It is the side elevation showing the layout of the conventional microelectronics manufacturing system.
[Drawing 3] It is drawing showing the flow state of the pure air of the conventional microelectronics manufacturing system.
[Drawing 4] It is rough structural drawing of the conventional exposure system which has the flow structure of the pure air of the form shown in drawing 3 .
[Drawing 5] It is drawing showing the perpendicular-structure of the microelectronics system concerning the 1st example of the cleaning method concerning this invention, and equipment.
[Drawing 6] It is drawing showing the perpendicular-structure of the microelectronics system concerning the 2nd example of the cleaning method concerning this invention, and equipment.
[Drawing 7] It is drawing showing the perpendicular-structure of the microelectronics system concerning the 3rd example of the cleaning method concerning this invention, and equipment.
[Drawing 8] It is drawing showing the perpendicular-structure of the microelectronics system concerning the 4th example of the cleaning method concerning this invention, and equipment.
[Drawing 9] It is drawing showing the perpendicular-structure of the microelectronics system concerning the 5th example of the cleaning method concerning this invention, and equipment.
[Drawing 10] It is rough perpendicular structural drawing of the microelectronics exposure system which has the flow structure of pure air shown in drawing 7 .
[Drawing 11] It is drawing showing the example of the pure air exhaust applied to the example of the microelectronics system concerning this invention, and a method.
[Drawing 12] It is drawing showing the perpendicular structure of the 1st example of the aligner in which it is applied to the example of the microelectronics system concerning this invention, and a method, and deals.
[Drawing 13] It is drawing showing the perpendicular structure of the 2nd example of the aligner in which it is applied to the example of the microelectronics system concerning this invention, and a method, and deals.
[Drawing 14] It is the front view of the wafer gate in which it is applied to the example of the microelectronics system concerning this invention, and a method, and deals.
[Drawing 15] It is the cross section of the wafer gate shown in drawing 14 .
[Drawing 16] It is the side elevation of the louver of the wafer gate shown in drawing 14 .
[Drawing 17] It is drawing showing the perpendicular structure of the 3rd example of the aligner in which it is applied to the example of the microelectronics system concerning this invention, and a method, and deals.
[Drawing 18] It is the rough perspective diagram of the wafer lifter of an aligner which was applied to the example of the microelectronics system concerning this invention, and a method, and deals and

which was shown in drawing 17 .
[Description of Notations]
104 Wall
110 Working Area
114b Boat gate
120 Service Field
131 Wafer Process Field
131a Opening
132 Wafer Transfer Field
132a Wafer gate
200 Up Plenum
300 Lower Plenum
500 Air Supply Equipment

[Translation done.]

* NOTICES *

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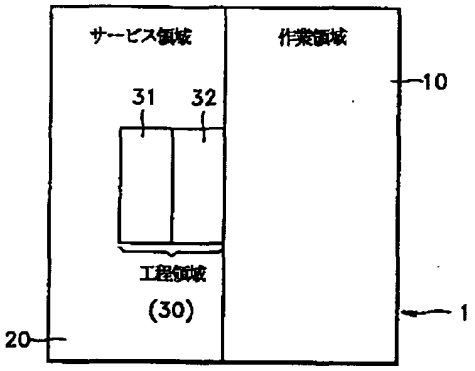
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

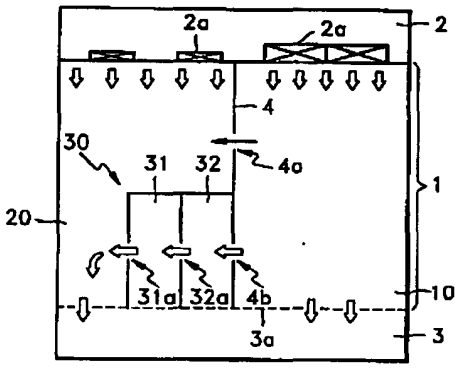
[Drawing 1]

(従来の技術)



[Drawing 2]

(従来の技術)



[Drawing 3]

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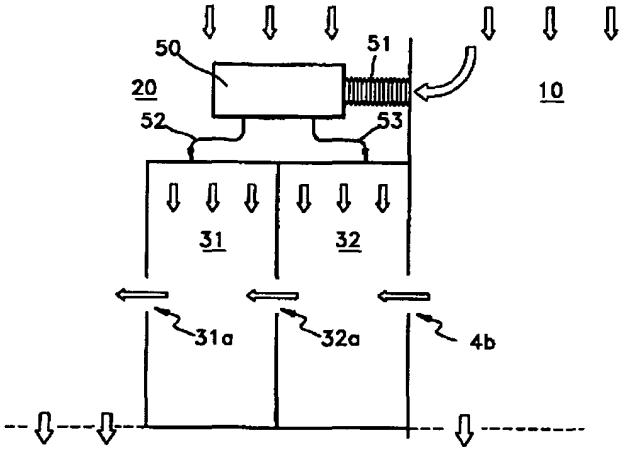
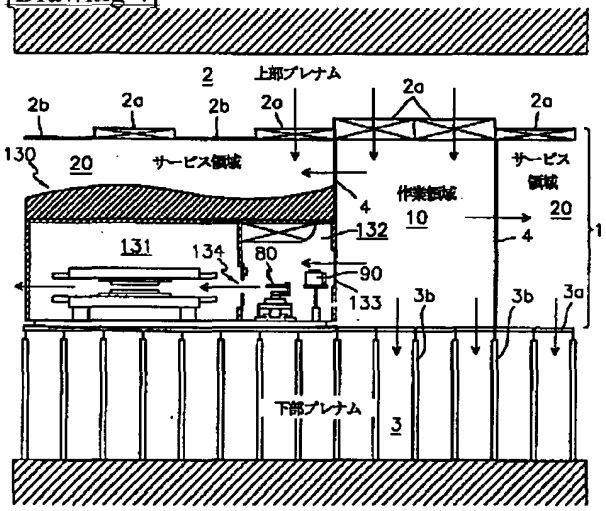
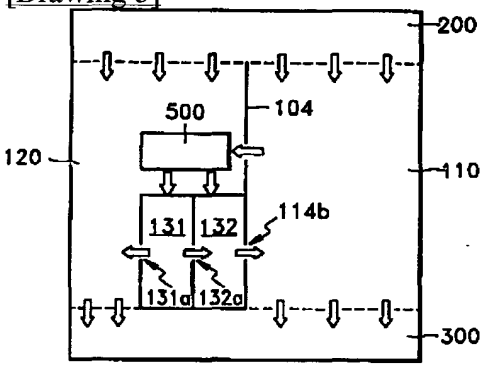


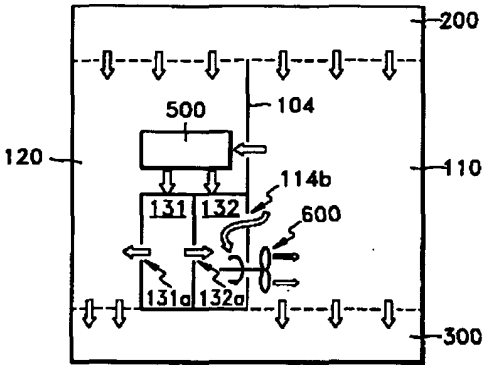
[Drawing 4]



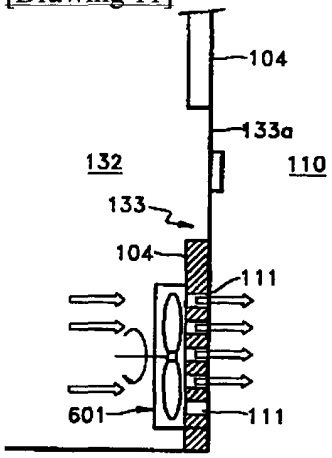
[Drawing 5]



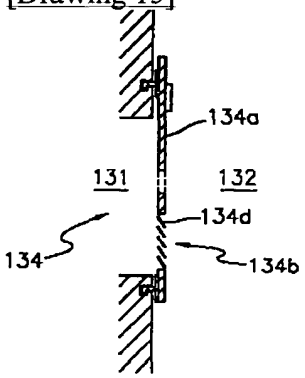
[Drawing 6]



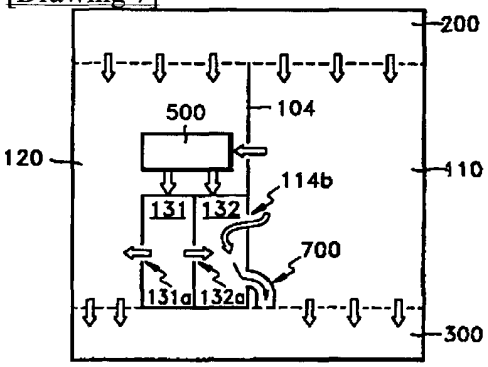
[Drawing 11]



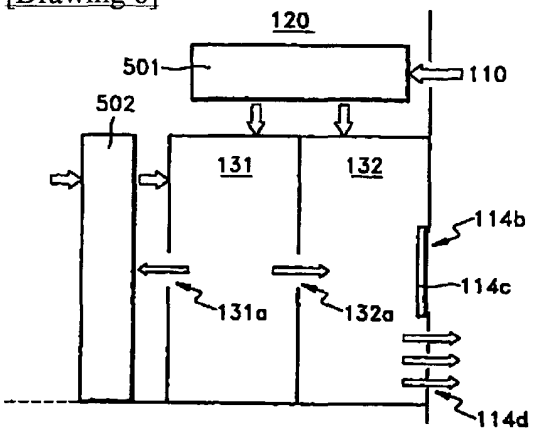
[Drawing 15]



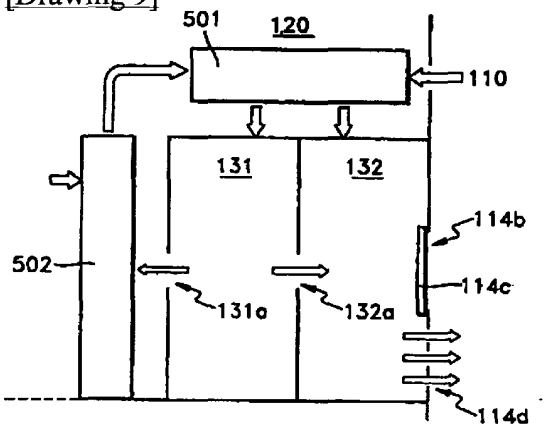
[Drawing 7]



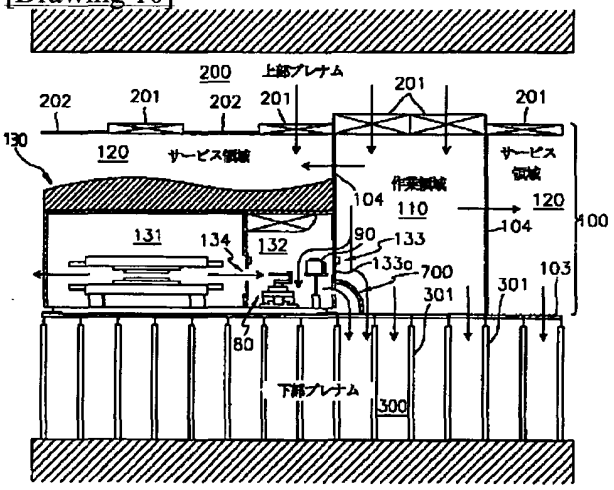
[Drawing 8]



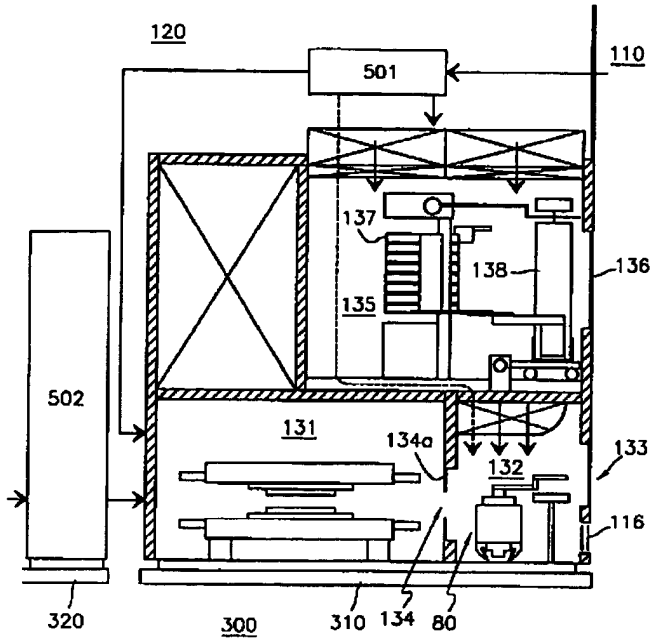
[Drawing 9]



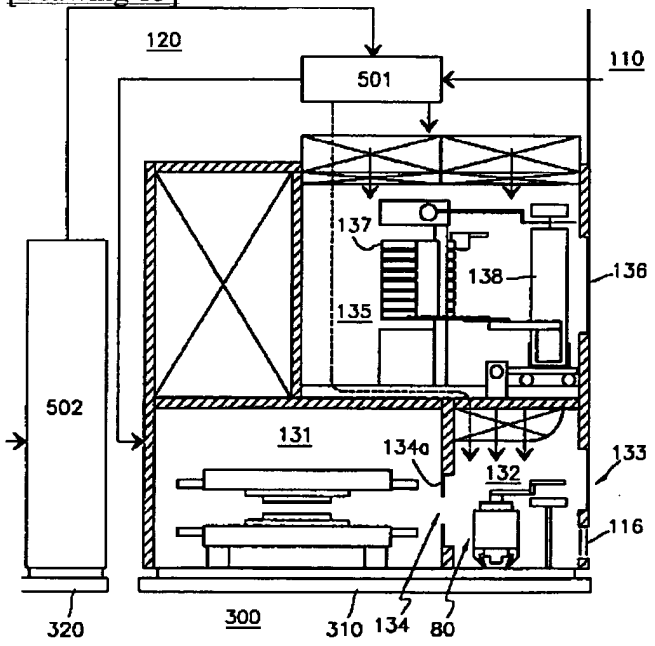
[Drawing 10]



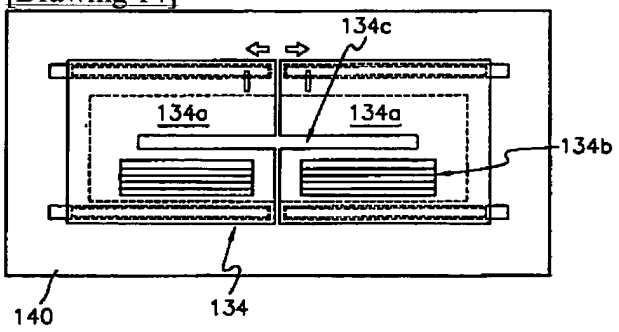
[Drawing 12]



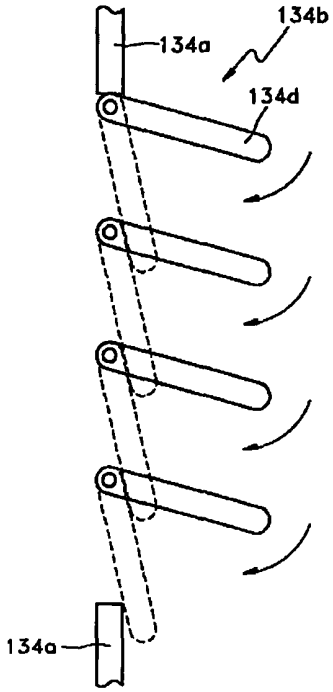
[Drawing 13]



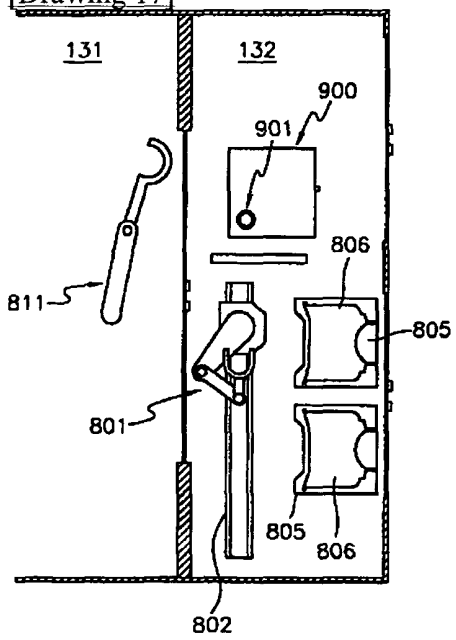
[Drawing 14]



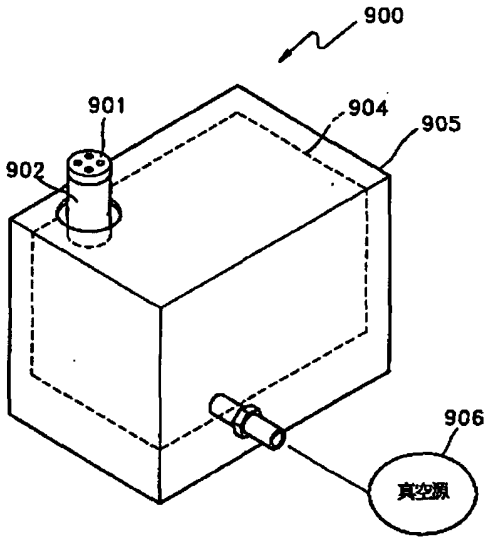
[Drawing 16]



[Drawing 17]



[Drawing 18]



[Translation done.]